searching for these hairs. In the course of my travels I have ever found it unwise to laugh at what I conceived to be the prejudices of a people simply because I could not understand them. In this instance, however, I must confess the results were not worth the trouble I took. The hairs, such as I picked up, and such as were shown me by the Chinese, had certainly been produced above the earth and not below it. In some instances they might readily be traced to horses, dogs, and cats, while in others they were evidently of vegetable origin. The north-eastern part of China produces a very valuable tree known by the name of the hemp-palm [*Chamærops Fortunei*, see Kew Report, 1880, p. 31], from the quantity of fibrous bracts it produces just under its blossoms. Many of these fibres were shown to me by the Chinese as a portion of the hairs in question; and when I pointed out the source from which such had come, and which it was impossible to dispute, my friends laughed, and, with true Chinese politeness, acknowledged I was right, and yet I have no doubt they still held their former opinions concerning the origin of such hairs. The whole matter simply resolves itself into this: if the hairs pointed out to me were the *true* ones, then such things may be gathered not only after earthquakes, but at any other time. But if, after all, these were not the real things, and if some vegetable (I shall not say animal) production was formed, owing to the peculiar condition of the atmosphere and from other causes, I can only say that such production did not come under my observation."[1]

W. T. THISELTON DYER

THE U.S. GEOLOGICAL SURVEY

THE American papers contain an announcement which will be received with some astonishment in Europe. A member of Congress, Mr. Herbert, of Alabama, has introduced a Bill into the House prohibiting the Geological Survey of the United States from expending any money for palæontological work, except for the collection, classification, and proper care of fossils and other material; and from composing, compiling, or preparing for publication monographs, bulletins, or other books except an annual report containing merely the transactions of the bureau and other routine official matter. It is further proposed to sell off the laboratories and other property of the Survey which after the passing of the Act would be no longer needed. Of course there may be official or departmental reasons for reorganisation or retrenchment of which the outside world is ignorant. But these reasons must be very serious indeed to justify such action as is proposed. If there is one scientific undertaking of which the United States have pre-eminently just reason to boast as a model to all civilised countries, it is their Geological Survey. For completeness of equipment it has no rival in the world, and already though it has only been seven years in existence its work both for excellence and amount has placed it in the very front of the scientific organisations of the time. Whether we look to its purely scientific achievements or to the importance of its practical work in mining and other economical departments, the crippling of the resources of the Geological Survey of the United States would be a calamity against which not only all lovers of science but all who are interested in the continued development of the natural productions of the great republic would energetically protest. We can hardly suppose that Mr. Herbert will have many supporters, and it is difficult to conceive from what possible motive he is acting. He calculates that if his Bill passes he will effect a saving of 250,000 dollars. He should try to find some branch of the public service where economy and retrenchment could be practised without seriously injuring the scientific credit and industrial progress of his country. And no doubt he could succeed in this search.

[1] "During a recent visit to the North-West Provinces of India, where earthquakes are not unfrequent, I could find no traditions such as that I have alluded to."

THE ROYAL SOCIETY SOIRÉE

THE President and Council of the Royal Society are to be entirely congratulated on the success of the reunion at Burlington House on the 12th inst. It was generally felt that the display of objects of interest was finer than any brought together for some years, and the general satisfaction expressed must have amply rewarded those upon whom the burden of the arrangements had fallen.

It is a little hazardous to say which was the most interesting object; but as an *actualité* the unpaired parietal eye of Sphenodon exhibited by Mr. Baldwin Spencer, fully described in last week's NATURE, perhaps bore the palm.

Next in biological interest came an exhibit by Mr. W. H. Caldwell including a complete series of the Ceratodus from the unsegmented egg to hatching. The complete exhibit illustrated early stages in development of the Monotremata—Ornithorhynchus and Echidna, the Dipnoid Ceratodus and some marsupial genera. The series were as follows:—

(1) Series of early stages of Ornithorhynchus, from a few hours after fertilisation to the newly-laid egg, of about the stage of a 36-hour chick; (2) series of early stages of Echidna, from just before laying to the newly-hatched fœtus; (3) various stages of young Echidna, from hatching up to 5 inches long; (4) complete series of Ceratodus, from the unsegmented egg to hatching; (5) stages of young Ceratodus after hatching; (6) series of about thirty stages, from segmenting egg up to birth of *Phascolarctos cinereus*; (7) ditto of *Halmaturus rufus*; (8) Specimens showing the arrangement of the embryonic membranes in *Macropus major*.

There were two exhibits of micro-organisms—one of micro-photographs of Bacteria, and another of certain micro-organisms themselves—by Mr. Cheshire. The former included enlargements, from negatives obtained with an oil immersion $\frac{1}{25}$ inch, of the following:—

Anthrax-bacillus, in tissue-sections and cultivations; hay-bacillus; bacillus of malignant œdema; micrococcus of pneumonia; tubercle-bacillus; bacillus of foul brood; *Bacillus megatherium*; *Clostridium polymyxa*; microbe of chicken cholera; comma-bacilli of Koch, Lewis, and Tinkler; Bacteria of putrefaction.

Mr. Cheshire exhibited (1) *Bacillus alvei* in sporulation; (2) *Bacillus alvei* spores in chain; and (3) spermatozoa of Apis forming in flocculent masses for packing in spermatophore.

Preparations illustrating the histological structure of the secretory tissues of certain plants, in which the substances secreted are of economic importance, were exhibited by Mr. W. Gardiner. Among these were hairs of leaf of *Flemingia Grahamiana*—wurras dye; laticiferous vessels of the stem of *Manihot Glaziovii*—ceara rubber; glands of the leaf of *Cinnamomum Camphora*—camphor.

In connection with biological inquiry may be specially mentioned Mr. Frank Crisp's demonstration of a new microscopic object-glass, by Prof. Abbe of Jena, an exhibit rich in hope not only for the future of microscopy, but also for astronomy. Eight of the ten lenses of this objective are made of a new kind of optical glass, composed of phosphates and borates without silex. The glass hitherto used contains as essential components only six chemical elements, while the new objective contains not less than fourteen. The secondary spectrum is by this means entirely removed, and only a small tertiary spectrum remains. The improvement in definition is especially marked

in the case of Bacteria and other minute micro-organisms.

As representing this last-named science we may specially mention a magnificent collection of the photographs of sun, stars, and planets which have recently astonished and delighted astronomers. The collection included specimens of the results recently obtained by Dr. Janssen, the Brothers Henry, Mr. Common, and Dr. Gill. Among these the star-photographs by the Brothers Henry, a photograph of a sunspot by Dr. Janssen, in which the minute structure of the penumbra and bridges of a large sunspot were exquisitely shown on a scale of something like 10 feet to the solar diameter, and two exquisite photographs of Saturn, enlarged eleven times by the Brothers Henry, excited the greatest wonder.

The Solar Physics Committee sent a collection of the daily solar photographs which they are now obtaining from India and the Mauritius to supplement the Greenwich series. These photographs are on scales of 12 inches or 8 inches to the solar diameter.

Mr. Norman Lockyer exhibited some photographs of spot spectra showing the widening of the lines and the reversal of H and K; and also some photographs illustrating the first results of a new branch of work recently undertaken at South Kensington, in which it is hoped eventually to obtain photographs of the spectrum of the chromosphere and prominences without an eclipse. The photographs showed that the bright lines H and K have already been caught. Mr. Lockyer also exhibited the new split-grating spectroscope recently described at the Royal Society; the green line of thallium or the red line of lithium being shown between the D lines.

Nor must we forget to mention a selection of drawings of the sun on a large scale from those now daily made at Stonyhurst College Observatory; these were exhibited by the Rev. S. J. Perry. Special care has been devoted to the faculæ, which are drawn with a red pencil, and their position is as accurately determined as that of the spots.

Mr. Howard Grubb exhibited a model of an equatorial and observatory which he has proposed for the 3-feet refractor for the Lick Observatory. All the required motions of the telescope, dome, and rising floor are effected by water-power (represented here by clockwork) governed by an electrical arrangement, the commutator being portable and carried by observer. By this arrangement the necessity of assistants, even in case of the largest sized instrument, is obviated, and the observer himself can, from any part of the Observatory, control all the motions of instrument and dome without using any physical exertion.

Even observatory clocks were not neglected. Dr. Leonard Waldo, of Yale College, U.S., exhibited a gravity escapement adapted for use in a precision clock, in which the escapement lifts the gravity arms with a gradually-increasing velocity, and with more certainty than in the ordinary forms; and a new astronomical clock.

Finally the Eclipse Committee of the Royal Society were represented by charts of the West Indies and of the Island of Grenada, showing the path of the total eclipse of August next, arrangements to observe which are now being made.

In pure physics the *pièce de résistance* was the colour photometer, for comparing the luminosity of colours and for testing the perception of colour, exhibited by Capt. W. de W. Abney, and Major-General Festing. The form exhibited was an improvement upon the original one, which was fully described in NATURE a little time ago.

Two exhibits by Mr. A. Stroh, also optical, may next be referred to. The first was an apparatus for showing stereoscopic effects on a screen; the next was an instrument for enlarging the angular division by means of reflectors, and thereby causing an object to be seen in exaggerated relief.

Electrical science was represented by the following new electrical apparatus, exhibited by the Electrical Power Storage Company: (1) various types of cells; (2) ring contact switches; (3) automatic switch, for closing the circuit when the dynamo is running at the required speed, and for breaking it in case of accident; (4) hydrometers, specially for use with the Company's cells; (5) pocket voltmeter for cell-testing; (6) automatic switch to cut out two or more cells when dynamo is started to keep constant electromotive force on lamps.

In addition to these there were the following, contributed by Messrs. Woodhouse and Rawson:—

(1) Assortment of incandescent lamps, showing the latest developments in connection with the manufacture of incandescent lamps. (2) Small arc lamp, giving 200 to 300 c.p. or more if required: specially designed for being connected upon the same circuit with incandescent lamps of ordinary c.p., and being run by the same dynamo. These lamps can be also wound for running in series. (3) Switch-boards, illustrating the universal system introduced by Messrs. Woodhouse and Rawson. (4) Electric-lighting switches and safety-junctions, for manipulating currents of from 200 to 500 amperes and upwards.

Mr. Pitkin exhibited some very interesting portable electric lamps intended for use in coal-mines and powder-magazines. A small teak box contains three or more accumulator-cells, which, when charged, give a continuous light for ten hours. In a modified form of the invention the lamp is detached from the box containing the accumulators, and is electrically connected to it by means of a flexible cord; by this arrangement a very convenient railway reading lamp is formed, as the box can be placed under the seat or on the rack, and the lamp itself either held in the hand, or hooked to the back cushions or to the button-hole of the coat of the reader in a convenient manner.

A new electrical influence-machine, having eight disks working within a glass case, was exhibited by Mr. Wimshurst.

Electricity applied to meteorology was represented by an electrical wind-vane and indicator exhibited by Mr. F. M. Rogers. This instrument enables the direction of the wind to be ascertained at any moment, and at any reasonable distance from the vane, within a house, observatory, or office. One vane will actuate several receivers, which are quite independent of each other. Should the vane remain for many hours upon any one point no waste of current takes place; the expenditure of such being limited to the momentary impulse required to effect change of direction upon the dial of receiver.

Messrs. de la Rue and Hugo Müller showed how the chloride of silver battery could be applied to electric lighting by a quantity arrangement. Instead of using a solution of chloride of ammonium simply, the solution, containing 2½ per cent. salt, is converted into a vegetable jelly, by dissolving in it Ceylon moss (Agar-Agar) to make a stiff jelly; this supports the zinc plate. The chloride of silver in *powder* is spread evenly on the bottom of the dish on which a piece of silver foil is placed.

One of the most interesting exhibits was by Mr. Conrad Cooke, C.E., who showed Dr. Auer von Weisegg's incandescence system of burning gas. A small Bunsen flame burning about 2½ feet of gas per hour gave a dazzling light of about twenty candles by suspending in it a gauze cylinder which had been impregnated with the salt of a rare earth (probably zirconium). Tested by the spectroscope, the light showed a large excess of blue rays as compared with an ordinary gas-flame.

Voltaic cells with solid electrolytes were exhibited by Mr. Shelford Bidwell.

Great excitement was caused among the chemists by the specimens of the new element germanium and some

of its compounds, from Prof. Winkler, of Freiberg, brought by Dr. Hugo Müller. These were :—

(1) Metallic germanium ; (2) germanium monosulphide, GeS ; (3) germanium disulphide, GeS_2 ; (4) crystallised germanium, obtained by the action of hydrogen on germanium sulphide.

Germanium is claimed to be the ekasilicium predicted by Mendeléeff in his periodic law.

Mendeléeff's ekasilicium		Germanium
Sp. Gr.	5·5 ...	5·469
Atom. weight ...	72 ...	72·75
Atom. val.	13 ...	13·3

Mr. G. J. Symons exhibited a small pocket thermometer as constructed by Immisch. This thermometer is actuated by a minute Bourdon tube. It is shaped like a watch, is water-tight, and nearly unbreakable.

A terrestrial globe showing magnetic meridians for the epoch 1880, and general distribution of the secular change of the declination, made for the Hydrographic Department of the Admiralty, was exhibited by Staff-Commander Creak, R.N. The approximate positions of the foci of greatest secular change of the declination and vertical force—except for the Arctic and Antarctic zones—are also shown. A consideration of these foci shows the general angular motion of the north or marked end of a freely suspended needle as regards secular change.

The fact that our space is nearly exhausted, although we have only referred to about one-half of the exhibits, well indicates the care taken to make the *soirée* a success. In conclusion we refer as briefly as possible to some of the remainder :—

Jordan's photographic sunshine-recorder, with specimens of observations, exhibited by Mr. J. B. Jordan, of the Mineral Statistics Branch, Home Office.

Original geological map of the Orange Free State, and section of part of Cape Colony, by the late G. W. Stow (unpublished), exhibited by Prof. Rupert Jones, F.R.S.

Specimens of daily synchronous charts of the North Atlantic for the period of thirteen months, from August 1882 to August 1883 inclusive, now in the course of preparation by the Meteorological Office, exhibited by the Meteorological Council. The specimens show the meteorology of the North Atlantic on three summer and on three winter days.

New and interesting plants, exhibited by the Director of the Royal Gardens, Kew.

Nolls' apparatus for demonstrating secondary growth in thickness of stems ; Hopfe's Collectiones Phytomicrotomicæ, exhibited by Prof. Bayley Balfour, F.R.S.

Collection of stone-headed arms, implements, &c., from New Guinea, exhibited by Mr. H. B. Brady, F.R.S.

Diagrammatic sections showing the geological structure and physical features of parts of Arabia Petræa, and Palestine, exhibited by Prof. Edward Hull, F.R.S., Director of the Geological Survey of Ireland : (1) from the sea-coast at Askalan by Jerusalem to the Jordan Valley at Jericho ; (2) from the tableland of Southern Judæa—across the Dead Sea to the Plains of Moab ; (3) from the Gulf of Suez, near Tor, by the Mountains of Sinai, to the Plateau of Badiet et Tîh.

Apparatus for measuring the luminosity of leaves, invented and exhibited by Dr. Gorham, to show that the white light reflected from leaves can be measured in *cents.* of a circle by the novel use of a *gray ring*, and that by putting this luminosity in the form of an equation its equivalents in colour are discovered, which, when placed in sectors on a circular disk and rapidly rotated on a wheel, are seen to match the colour of the leaf from which the luminosity has been originally reflected.

Specimens of miners' electric lamp, invented and exhibited by Mr. Swan.

Dr. Sohlberg's celestial globe of glass ; Dr. Schmidt's tellurium ; cosmographic clocks for showing universal time ; contoured map of the English Lake District, constructed by Mr. Jordan ; enlarged original photographs taken by Mr. Joseph Thomson in his recent journey up the Niger ; replica of Frankfort globe, of date 1520 ; two large diagrams—(1) Roraima, British Guiana, by Mr. Im Thurn, (2) a similar formation in the north of Brazil, by Mr. Wells ; collection of minerals from summit of Mount Roraima, exhibited by the Royal Geographical Society.

NOTES

IT is with much regret that we announce the death of Surgeon-Major T. Lewis, Medical Staff, Assistant Professor of Pathology in the Army Medical School at Netley. Within the last few weeks the Council of the Royal Society decided to recommend Dr. Lewis for their Fellowship, in recognition of the importance of his various contributions to science. Dr. Lewis had only just reached the forty-fifth year of his age at the time of his death.

THE death is announced of Dr. E. Linnemann, Professor of Chemistry at Prague, which occurred on April 27. Among his papers a letter was found addressed to the Vienna Academy of Sciences containing a communication on a new chemical metallic element called austrium (Aus). This new element was prepared by the late Prof. Linnemann from orthite of arendal. The spectrum of austrium shows two violet lines ; the wave-lengths were found to be, for Aus α, $\lambda = 416{\cdot}5$, and for Aus β, $\lambda = 403{\cdot}0$. According to a note made by Prof. F. Lippich, of Prague, who communicated Prof. Linnemann's letter last week to the Vienna Academy, three not yet identified lines—$\lambda = 415{\cdot}56$, $\lambda = 416{\cdot}08$, and $\lambda = 416{\cdot}47$—are shown in Ångström's atlas of the normal spectrum of the sun in the neighbourhood of the Aus α line ; the last of them might be supposed coincident with the Aus α line ($\lambda = 416{\cdot}5$).

M. CHEVREUL, who on August 31 will be a centenarian, was on Monday afternoon presented by his colleagues of the Academy of Sciences with a bronze bust of himself, executed by Paul Dubois. Admiral Jurien de la Gravière, one of the senior members—his age being 73—made the presentation, and warmly complimented M. Chevreul on his long and distinguished career, which made France proud of him and of herself. M. Chevreul, who was much affected, made a brief acknowledgment of the honour done him.

THE Swedish Academy of Sciences celebrated its centenary on April 5 last, having been founded by Gustavus III. on the eve of the French revolution.

THE paper to be read at the ordinary meeting of the Society of Arts on May 26 will be "The Purification of Water by Agitation with Iron, and Sand Filtration," by William Anderson, M.Inst.C.E. On Tuesday, May 25, a paper on "Cyprus since the British Occupation," will be read by G. Gordon Hake, before the Foreign and Colonial Section. In the Indian Section, Capt. Richard Carnac Temple's paper on "Every-day Life of Indian Women, as Revealed in their own Sayings," will be read on May 21.

WILLIAM LANDSBOROUGH, whose name is known in connection with Australian exploration, died at Caloundra, near Brisbane, on March 15. His father was a Scottish naturalist of note. Having gone to Australia, Landsborough in 1860 discovered the head of the Thompson River, and in the following year traced the Gregory and Herbert Rivers to their sources. He then undertook to lead the expedition in search of Burke and Wills, and traversed the continent from the Gulf of Carpentaria to Melbourne. Subsequently he was appointed to a post in the public service of Queensland, and was voted 2000*l.* for his explorations in that colony.

A TELEGRAM from Catania of May 18 states that Mount Etna had been in eruption since 11 o'clock that morning. A very active discharge of vapour and cinders was proceeding from the western side of the central crater.

WE are glad to learn of the formation of a Natural History Society at Yokohama. The marvel is that so long a time has been allowed to elapse before such a society was founded there or in Tokio, for probably there are no communities in the world in which the proportion of men of science is so high as here. But no doubt the local Asiatic Societies and the Seismological